

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 09/542,897
Inventor: J. Chisnell
Filing Date: April 4, 2000
Title: Composite Sleeve For Sealing A Tubular Coupling

Group Art Unit: 3676
Examiner: Vishal A. Patel

Docket No.: FTP141A US

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Supplemental Appeal Brief under 37 CFR §1.193(b)(2)(ii)

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Commissioner for Patents
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Sir:

This Supplemental Appeal Brief is being filed in conjunction with a request to reinstate the appeal originally filed on September 25, 2002. This Supplemental Brief is being filed in triplicate and the fee originally paid for the initial appeal filed in September 2002, is considered to be applicable to this Supplemental Brief. All applicable extension of time fees were previously paid. If any further fee is deemed to be due, the commissioner is hereby authorized to charge the same to the undersigned's deposit account 22-0212.

REAL PARTY AT INTEREST

The real party at interest is Automotive Fluid Systems, Inc., as the assignee in this application.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be affected by or have a bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

The status of the claims as determined by the Examiner in the final Office Action dated December 30, 2003, Paper No. 15, is as follows:

- (a) Claims 1-13 and 15 are pending;
- (b) Claim 14 was withdrawn;
- (c) Claims 1-3 and 8 stand finally rejected under 35 U.S.C. §102(b);
- (d) Claims 4-6, 9-11 and 15 stand rejected under 35 U.S.C. §103(a); and
- (e) Claims 7 and 12-13 stand rejected under 35 U.S.C. §103(a).

STATUS OF AMENDMENTS

Since the filing of the original Appeal Brief on September 25, 2002, the Examiner issued a further action on December 2, 2002 to which a response was timely filed on March 3, 2003. A further Office Action dated June 3, 2003, Paper No. 12 was issued by the Examiner to which a timely response was filed by the Appellant on October 3, 2003. A final Action was issued on December 30, 2003, Paper No. 15, wherein the Examiner has continued the rejections outlined in the issues set forth below. Responsive to the final Action, is this paper requesting reinstatement of the Appeal with the appropriate supplemental Appeal Brief enclosed herewith.

SUMMARY OF THE INVENTION

Generally, Appellant's invention discloses a composite sleeve seal (20) that can easily be slipped over the end of a tube (44), that does not necessitate expensive processes involving machining O-ring grooves in a tube end, and that provides a seal that is superior to that achievable with conventional O-rings.

The composite sleeve seal (20) is made up of a body portion (22) having spaced apart collar sections (24) that are annular or ring-like in form. The collar sections (24) have a common inside diameter (24I) and outside diameter (24O). One of the collar sections (24) may also have a tapered portion (26) having a tapered surface (28). The collar sections (24) are interconnected by link segments (30). The link segments (30) are circumferentially equally spaced apart as shown in Figure 3 or, alternatively, as shown in the preferred embodiment of Figure 2, the link segments are integral with each of the collar sections which they connect such that the entire body portion (22) is constructed of one continuous material. The collar sections (24) are contiguous with seal portions (32) that are also annular or ring-like in form. The seal portions (32) interpose the collar sections (24) and abut the link segments (30) such that the seal portions (32) are positively interlocked with the body portion (22). The composite sleeve seal (20) may be positioned directly between a male tubular member and a female coupling member creating a seal therebetween without conventional O-rings, machined grooves, ridges, or ribs on either the male component or the female component.

The sleeve seal (20) of the present invention is additionally suitable for a variety of tube end-forming applications, such as the block connection (10). The sleeve seal (20)

is adapted to surround and engage a male tube (44) that is held to a male connecting block (42) by a roll formed annular upset bead (48). The block connection (10) includes a female block assembly (60) having a throughbore (66), a chamfer (68) and a transition surface (70) therebetween. The sleeve seal (20) is disposed between the male tube (44) and the throughbore (66) of the female connecting block (60). The seal portions (32) are radially compressed between the male tube (44) and female connecting block (62) and axially restrained by the collar sections (24) to form the primary seal.

Additionally, the tapered surface (28) of the tapered portion (26) of the sleeve seal (20) is adapted to locate against the transition surface (70) of the female connecting block (62) such that the transition surface (70) engages in annular line contact against the tapered surface (28) to create a secondary seal of the fluid-tight block connection (10). The line contact also forces the components to balance the sealing load concentrically about the centerline of the tube diameter thereby avoiding side-load types of failures.

ISSUES

The issues to be resolved are as follows:

(A) Are Claims 1-3 and 8, as finally rejected under 35 U.S.C. §102(b), unpatentable as being anticipated by the disclosure of Frye, U.S. Patent No. 4,715,624;

(B) Are Claims 4-6, 9-11, and 15, as finally rejected under 35 U.S.C. §103(a), unpatentable as being obviated by the teachings of Frye, U.S. Patent No. 4,715,624 in view of the teachings of Thompson, U.S. Patent No. 2,809,060; and

(C) Are Claims 7 and 12-13, as finally rejected under 35 U.S.C. §103(a), unpatentable as being obvious over the teachings of Frye in view of the teachings of Hansel et al., U.S. Patent No. 5,879,033.

GROUPING OF THE CLAIMS

For each ground of rejection that applies to more than one claim, such additional claims, to the extent separately identified and argued below, do not stand or fall together.

ARGUMENT

Issue A The rejection of Claims 1-3 and 8 under 35 U.S.C. §102(b), as being anticipated by Frye, U.S. Patent No. 4,715,624 is improper as a matter of law and this issue should be resolved in the Appellant's favor.

In the Office Action, the Examiner rejected independent Claims 1, 2, and 8, and dependent Claim 3 under 35 U.S.C. §102(b) as being anticipated by Frye, U.S. Patent 4,715,624. The undersigned attorney respectfully traverses the Examiner's rejection of independent Claims 1, 2, and 8, as well as dependent Claim 3 in view of the following argument and for the reason that the claims are not anticipated by Frye.

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. §102 is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof, functioning in substantially the same way to produce substantially the same results. As most recently noted by the Court of Appeals of the Federal Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick*, 221 USPQ 481, 485 (Fed. Cir.1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. §102, the Court stated:

“Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.”

Appellant's independent Claims 1, 2, 8, and 15 all require:

“1. A composite sleeve seal comprising:
a body portion including at least one collar section having at least one link segment extending therefrom; and
at least one seal portion contiguous with said at least one collar section and surrounding said at least one link segment to interlock said at least one seal portion with said body portion to form said composite sleeve seal as one integral component.”

“2. A composite sleeve seal for sealing a conduit connection, said composite sleeve seal comprising:
a body portion including a plurality of collar sections spaced apart from one another to define at least one gap therebetween, said collar sections being interconnected by at least one link segment spanning said at least one gap; and
at least one seal portion interposed said plurality of collar sections in said at least one gap and surrounding said at least one link segment to interlock said at least one seal portion with said body portion to form said composite sleeve seal as one integral component.”

“8. A fluid-tight conduit connection comprising:
a female component;
a male component positioned within said female component such that said female component circumscribes said male component; and
a composite sleeve seal circumscribing said male component such that said composite sleeve seal is interposed said male and female components for sealing said fluid-tight conduit connection, said composite sleeve seal comprising:
a body portion including a plurality of collar sections interconnected by at least one link segment; and
at least one seal portion interposed said plurality of collar sections and surrounding

said at least one link segment to interlock said at least one seal portion with said body portion to integrate said composite sleeve seal;

whereby said at least one seal portion is compressed by said male and said female components to primarily seal said fluid-tight conduit connection.”

It is respectfully asserted that Frye fails to disclose each and every element of Appellant’s independent claims. Specifically, Frye fails to disclose the following structural elements of Appellant’s independent claims:

A body portion... as recited in independent Claims 1, 2, and 8;

At least one collar... as recited in Appellant’s independent Claims 1, 2, and 8;

At least one link segment...as recited in Appellant’s independent Claims 1, 2, and 8;

At least one sealed portion...as recited in Appellant’s independent Claims 1, 2, and 8; and

At least one gap...as recited in Appellant’s independent Claim 2.

The Examiner indicated in the final Office Action of December 30, 2003, paper number 15, that Frye’s elements 12 and 13, of the embodiment disclosed, read on Appellant’s male and female components and that element 16 reads on Appellant’s at least one seal portion. Other than these three specific elements, the Examiner completely fails to identify by reference characters, or otherwise, any specific element as recited in Appellant’s claims that is disclosed in the prior art reference. To attempt to support the rejections set forth under 35 U.S.C. §102, the Examiner included in the final Office Action a marked-up copy of Figure 6 and selectively designated portions of the

figure utilizing Appellant's claim language and completely neglecting the actual disclosure in the specification of Frye, U.S. Patent No. 4,715,624. While the disclosure of Frye speaks for itself, the Examiner chooses to identify element 14 of Frye as a collar when the patent clearly discloses such element to be a piston. Further, the Examiner arbitrarily chooses to identify a portion of the piston as a link when here, once again, the disclosure of Frye is completely silent with respect to the use of a link or collar. Clearly, this is completely contrary to the law as set forth in *Lindemann Maschinenfabrick GmbH (supra)* and accordingly completely improper as a basis for the 35 U.S.C. §102 rejection. Also, the fact that this reference is being used to reject the claims following the withdrawal of an appeal, is not well taken especially since the reference has been on the record since the issue of paper number 5 and yet never once used to reject Appellant's claims.

Since the Examiner chose to include Figure 6 of the Frye reference in the Office Action, the undersigned assumes that the Examiner is, under the provisions of MPEP §2104 and §2125, using this drawing as prior art and neglecting to associate the written disclosure of the reference directly relating to the drawing in the prior art reference. In any event, in order to accomplish this, and if the drawing must indeed be evaluated for what it reasonably discloses and suggests to one of ordinary skill in the art, Figure 6 as depicted, clearly fails to show the claimed structural elements and how they are put together. In fact, the structural interrelationship between the elements of the invention shown in Figure 6 is completely neglected by the Examiner and in lieu thereof the Examiner is using the language of Appellant's specification and the structural relationships as recited in the claims of the Appellant's invention. One wonders what

would the Examiner choose to call the elements of Frye if the Appellant's terminology of his invention had not been known?

Again, the law is quite clear with respect to anticipation of a claim, for purposes of a rejection under 35 U.S.C. §102. *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co. (supra)* clearly requires that the reference discloses all of the elements of the claimed combination, or the mechanical equivalents thereof, functioning in substantially the same way to produce substantially the same results. Accordingly, Appellant respectfully submits that the Frye reference does not disclose each and every element arranged as in the claims of any of Appellant's independent claims. Therefore in applying the test for anticipation as set forth above in *Lindemann*, Frye does not anticipate either independent Claims 1, 2, or 8. Further, under principles of claimed dependency, Frye does not anticipate any of the dependent claims either. Accordingly, reconsideration and withdrawal of the rejection of Claims 1 through 3, and 8 under 35 U.S.C. §102(b) is respectfully requested.

Issue B The rejection of dependent Claims 4-6, and 9-11, and independent Claim 15 under 35 U.S.C. §103(a) as being obvious over the teachings of Frye, U.S. Patent No. 4,715,624 in view of the teachings of Thompson, U.S. Patent No. 2,809,060 is improper as a matter of law and this issue should be resolve in Appellant's favor.

Issue C The rejection of dependent Claims 7 and 12-13 under 35 U.S.C. §103(a) as being obvious over the teachings of Frye in view of the teachings of Hansel et al., U.S. Patent No. 5,879,033 is improper as a matter of law and this issue should be resolved in Appellant's favor.

In the Office Action, the Examiner rejected Claims 7, 12 and 13 under 35 U.S.C. §103(a) as being unpatentable over the teachings of Frye in view of the teachings of Hansel et al., U.S. Patent No. 5,879,033.

Appellant's attorney respectfully asserts that Appellant's invention is allowable also for the reason that Appellant's invention is not an obvious improvement over the prior art.

With respect to rejections under 35 U.S.C. §103, it is noted in MPEP §706 that the standard of patentability to be followed in the examination of a patent application is that which was enunciated by the Supreme Court in *Graham v. John Deere*, 148 USPQ 459 (1966), where the Court stated:

“Under Section 103, the scope and the content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.”

Accordingly, to establish a prima facie case of obviousness, the Patent Office must; (1) set forth the differences in the claim over the applied references; (2) set forth the proposed modification of the references which would be necessary to arrive at the claimed subject matter; and (3) explain why the proposed modifications would be obvious. To satisfy step (3) above, the Patent Office must identify where the prior art provides a motivating suggestion, inference or implication to make the modifications proposed in step (2) above. *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992). Prior to discussing the unobviousness of the present invention over the prior art, the problems, teachings, and disclosure of each of the Baron reference and Appellant's invention will be set forth, then the differences of the present invention over the prior art reference will be set forth.

Frye, U.S. Patent No. 4,715,624 is directed to problems associated with thermal coefficients of expansion of gas pipes where it is common to use a steel pipe above the

ground and plastic pipe underground. Accordingly, any transition fitting that is used must overcome considerable differences in temperate coefficients of expansion of the two materials.

To solve this problem, Frye teaches a transmission fitting having at one end a T section. Within an inner end of the pipe section of the T is a hollow cylindrical piston like member 14 having an outer diameter that is slightly less than the inner diameter of a pipe section 11'. A plurality of circumferentially extending grooves 15 include an O-ring 16, the overall dimension of the cylinder 14, and O-ring 16 being such as to provide a snug sealing fit within the pipe section while, at the same time, enabling both rotation and sliding movement of the piston member with respect to the pipe section. The piston is constructed of polyethylene and the O-rings are of a rubber like material such as neoprene. The plastic piston also has an internal metal stiffener sleeve 16' to provide dimensional stability underneath the O-rings. Appropriate stop means are provided at both ends of the piston like member to serve as limits for movement of the piston like member along the longitudinal axis of the pipe section. These limits consist of special flanges machined in the pipe section, or, alternatively, the pipe section itself may be rolled such to provide an inwardly directed circumferentially extending ridge. Two embodiments of the stop means are provided. One providing no relative longitudinal movement of the piston like member while not restricting rotation of the member and a certain amount of transfer movement while in a second embodiment, the stop limits, are arranged to provide an extensive length of the pipe section through which the piston like member may move longitudinally on dissimilar expansion of the plastic and metal parts or to relieve mechanical stresses which are developed in the

pipes from other sources, such as from direct pressure contact made with the plastic pipe.

Thompson, U.S. Patent No. 2,809,060, is directed to the difficulty of removing a seal or seat from an annular resilient ring inserted into a body, which exerts a radial component forced against a body sufficient to hold it into position against the usual removal forces.

To accomplish this, Thompson teaches an annular sealing ring of resilient material, which has embedded in the edges thereof a relatively stiff material that is broken in at least two locations to form areas of the texture. The annular seat is provided with perforated metallic edges, which are embedded in the edges of the annular seal at approximately the mid center section thereof. The seals are generally formed by molding and in this molding process the metallic perforated portions are molded integral with the seal. The metallic portions are broken at designated areas so as to form separate metallic portions at each edge. Accordingly, a resilient member, which has been flexed to a smaller diameter, may be readily inserted into the casing.

Hansel et al., is directed to the problems of prior art post connectors of the type disclosed in German Patent DE4413346 C2 wherein a free end of such connectors have a conically widening beveled plug edge and an adjoining cylindrical staff with several truncated expansions, as well as an annular contact flange at the end of the plug in area. In order to achieve a better fit of such connectors, the tube or hose nipples are already in use, with a conical taper at the backside of the first truncated expansion and an encircling groove between the expansion and the taper, in which is embedded an annular gasket ring round in cross section.

Hansel et al., teaches a hose connector wherein a connector with its truncated expansion and taper is designed in such a way that the end of the hose or tube can be slipped over the gasket ring without stressing or even slightly damaging the latter with its sharp leading edge. Hansel et al. teaches a hose connection wherein the first truncated expansion has a surface area and an opening angle at about 45 degrees in relation to the surface of the shaft and is oriented so as to provide a slight clearance past the outer surface of the gasket ring, while the surface area of the succeeding taper has a significantly flatter angle of inclination of about 20-30 degrees in relation to the surface area of the tube and its rearward projection is tangent to the outer surface. This type of connection prevents fuel flowing through the plug type connection from coming into contact with the gasket ring, so that the latter cannot be corroded away by the known aggressive fuel over the course of time.

Appellant's invention is directed to the problem in the prior art associated with machining O-ring grooves in the end of a tube and with poor sealability of tubular connections in general.

Appellant teaches a composite sleeve seal that can easily be slipped over the end of a tube and that provides a seal that is superior to that achievable with conventional O-rings disposed in grooves of a tube end. The composite sleeve seal includes at least one relatively rigid body portion that is collar-like in shape. Link segments integrally and axially extend from the body portion. A seal portion that looks like an O-ring is molded to the body portion so as to surround the link segments such that the seal portion interlocks with the body portion.

Legal Argument to Overcome 35 U.S.C. §103 Rejections of the Stated Claims

Clearly, there are significant differences between Appellant's invention and the teachings of Frye combined with either the teachings of Hansel et al. or the teachings of Thompson. First, as is clearly set forth above, Frye teaches a hollow cylindrical plastic piston having a plurality of O-rings thereabout slidingly and sealingly received within the open end of a metal section of pipe connected to the main line pipe. A plastic carrier pipe is fixedly received within the outwardly facing end of the piston for suitable interconnection to other equipment. First and second stop limits are spaced along the pipe section to maintain the piston within the pipe section. By appropriate provision of the stop limits, the plastic piston is allowed to tolerate considerable differences due to temperate coefficients of expansions of the two materials so as to accommodate the working of the pipes and interconnecting parts resulting from unequal expansion and contractions, in order to preserve the interconnection between the two pipes as well as to prevent breakage or damage. In contrast, Appellant teaches a composite or intermediate sleeve that is mounted over a male tube end and is received by a female tube end. The composite sleeve is a molded, body portion having spaced apart collar sections having spaced apart sealed link segment portions that are continuous with the collar sections and are positively interlocked with the collar sections. The composite sleeve seal includes a body portion having annular collar sections spaced apart from each other to define gaps therebetween. The annular collar sections are interconnected by link segments spanning the gaps. The sealed portions interpose the collar sections in the gaps and surrounds the link segments to interlock the sealed portions within the body portion to form a composite seal as an integral component. In conventional

fittings, the male component has a set of grooves containing O-rings that are compressed by the female component to create a seal. With the present invention neither the male component nor the female component has O-rings or O-ring grooves. There are no O-rings, machine grooves, ridges, or ribs on either the male component or the female component. Instead, the composite sleeve of the present invention is positioned between the male tubular member or the female tubular member thereby creating a seal. Without machined grooves, the tube end forming process is much simpler and a more controllable manufacturing process results with a higher quality product.

There is absolutely no motivation anywhere in any of the prior art references to combine the teachings of either the Hansel et al. or Thompson references with the teachings of Frye in an attempt to obviate Appellant's invention in view of the teachings of the primary reference Frye. Accordingly, the Examiner has completely failed the burden as set forth in MPEP §706.02(j), with respect to the requirements to establish a prima facie case of obviousness. Further, the Examiner has completely failed to meet the requirements set forth in MPEP §2141-2144.09 with regard to the requirements for a proper 35 U.S.C. §103 obviousness rejection.

If, as the Examiner suggests, the teachings of Frye are combined with the teachings of Thompson or Hansel et al., in an attempt to obviate Appellant's invention, it is clear from the teachings that the suggested combination could not possibly result in Appellant's invention and would in fact require extensive additional structure in an attempt to acquire similar results. Even if accomplished, it must be pointed out that if the sealing member of Thompson is combined with Frye, or the host connector of

Hansel et al., such combination would have absolutely no effect and would be indeed incompatible with each other or alternatively would require significant additional structure which would certainly be incompatible with itself in view of the objectives of each of the references and in fact would further be technologically incorrect in view of the objective set forth in Appellant's invention. Further, the combination of Hansel et al. with the teachings of Frye would be inoperative in view of the objectives set forth in Frye.

Even if as the Examiner suggests the teachings are somehow combined, one skilled in the art would have no basis for making such a combination of the teachings of either Hansel et al. or Thompson with Frye since neither of these references are directed to the problems solved by Appellant's invention nor is Frye, Hansel et al. or Thompson directed to teaching a composite sleeve element as set forth in the claims. It is respectfully suggested that, but for the disclosure made by the Appellant in the application, there is no suggestion whatsoever to combine the teachings of Frye with Hansel et al. or Thompson in order to obviate Appellant's invention as set forth by the claims presently pending in the application. Thus, it is only through Appellant's teachings and disclosure that one of ordinary skill in the art would appreciate the need for a composite sleeve seal as set forth in the independent claims. In view of this, a person of ordinary skill in the art would not seek to combine these references cited by the Examiner to produce the results that Appellant's invention as now claimed teaches. It is well settled patent law that the mere fact that a disclosure can some how be combined with other references does not make that combination obvious unless the prior art contains some suggestion of the desirability of combining the prior art

references. Here, the prior art contains absolutely no suggestion whatsoever for combining the references as set forth in the Examiner's rejection to teach the invention as claimed according to Appellant's disclosure. Therefore, it is respectfully suggested that the Examiner is using hindsight reconstruction in an attempt to obviate Appellant's invention after having the benefit of reading Appellant's application. Absent recognition of the problem faced by the Appellant, the prior art cannot possibly suggest, singularly or in combination, a solution as novel as Appellant's invention. Accordingly, Appellant's invention is an unobvious improvement over the prior art and not an obvious modification of any of the references cited by the Examiner. When viewed singularly or collectively, none of the prior art references teach a novel composite sleeve seal as set forth in the claims.

Appellant solved a general long-felt but unsolved need in the prior art of sealing tubular connections. Reduction of part count, part complexity, and part costs as well as corresponding reduction in the manufacturing complexity of tubular connections is an ongoing need in this mature and competitive industry. Up until Appellant's invention, no one has recognized, much less suggested or used, an integrated composite sleeve to replace the classic groove and O-ring configuration of a tubular end-form. Appellant now provides a fluid-tight conduit connection that requires neither extensive tube nor seal manufacturing operations and that enhances the sealing capability of a tubular coupling. Therefore, Appellant's invention addresses and makes another significant step toward reduction of complexity of tubular connection design and manufacture.

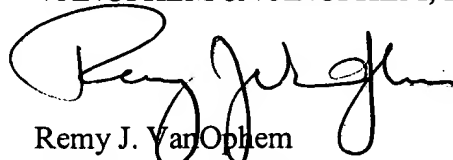
In view of the foregoing remarks, the undersigned attorney respectfully submits that the pending independent claims as well as the dependent claims are clearly

allowable. Therefore, Appellant's attorney respectfully requests that the Examiner's rejections under 35 U.S.C. §103 be withdrawn from the claims as submitted herein and that a formal Notice of Allowance be issued therefor.

If the Examiner has any questions with respect to any matter now of record, Appellant's attorney may be reached at (586) 739-7445.

Respectfully submitted,

VANOPHEM & VANOPHEM, P.C.



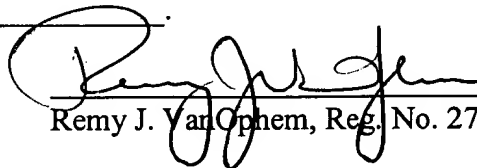
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